



Musical Drawdio Puppet

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TOOLS:

- [Marker \(1\)](#)
- [Needle \(1\)](#)
- [Pliers \(1\)](#)
- [Scissors \(1\)](#)
- [Sewing machine \(1\)](#)
- [Soldering iron \(1\)](#)
optional



PARTS:

- [Fleece \(1\)](#)
2 coordinating colors for the body and inside legs/bottom
- [Polyester fiberfill \(1\)](#)
- [Thread \(1\)](#)
- [Conductive thread \(1\)](#)
- [Conductive fabric \(1\)](#)
- [Resistor \(24"\)](#)
- [Drawdio \(1\)](#)
assembled
- [Sew-on snaps \(1\)](#)
optional

SUMMARY

This octopus/jellyfish-inspired puppet lets you make different squeaky sounds using an embedded Drawdio. Hold the puppet by putting one hand in the loop on its belly. Use the other hand to touch conductive spots on its legs, which complete the Drawdio's circuit to make sounds.


Using the technique shown in the Make:Online project [Unruly](#), 100K resistors in the legs create a change in pitch between each conductive circle. I experimented with different resistor values at the end to change the sound of each leg as a whole and included some that I thought sounded cool. Feel free to change up the resistor values and make your own unique soundscape.

Step 1 — Musical Drawdio Puppet

- Print out PDF pattern and cut all your fleece/conductive fabric pieces.

Step 2

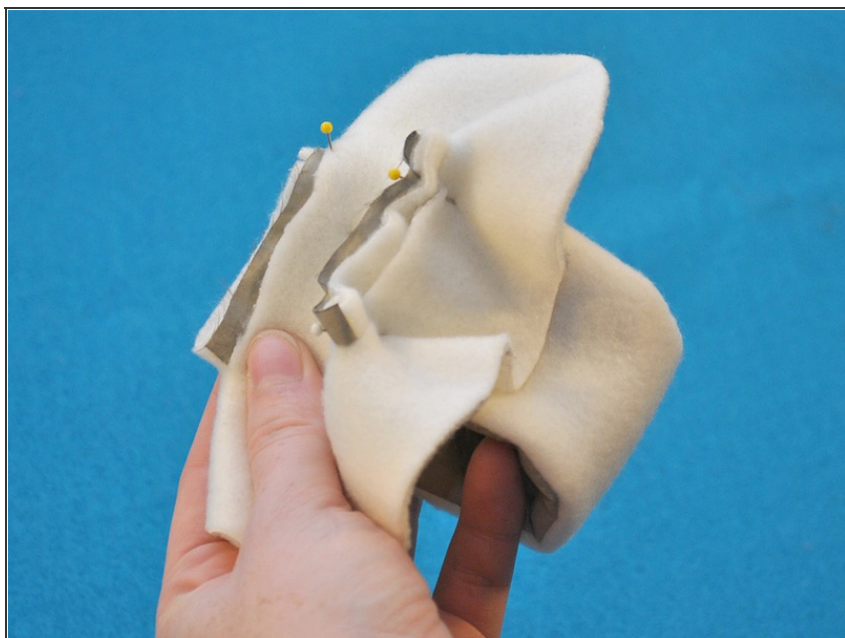


- Pin and sew the six body pieces (A) of the puppet together along the side seams.
- *I find it easiest to sew the edges of three pieces together and then pin/sew the two halves together.* 
- At this point it should look sort of like a hat. Put aside.

Step 3

- With right sides together, pin and sew a piece of conductive fabric to a piece of fleece along the long edges to make the loop (B).
- Turn inside out.

Step 4



- With the conductive side facing inward, pull the ends of the loop through the slits in the circular bottom piece (C). Leave about 1/4" - 1/2" sticking out the end. Pin and sew in place.

Step 5




- Thread the bobbin of your sewing machine with conductive thread and switch to a zig-zag stitch.
- With the right side facing down, sew a line down the border piece (D) about 1" from the edge and ~3.5" inches from the ends (as marked on the pattern).
- *Leave a long tail (about 4") of conductive thread one end.*
- Fold in half with the conductive thread facing outwards.



Step 6



- Carefully pin the body, border, and bottom pieces together w/ right sides facing inward. Position the border in-between the body and the bottom pieces so that the zig-zag conductive thread side is facing the bottom loop.
- Let any extra length on the border hang out and sew along the edge leaving about 2" of the seam open for turning it right-side out.
- Pull the loose tail of conductive thread through  the opening to make sure it doesn't get sewn/caught.

Step 7



- On the loop end opposite from the loose tail on the border piece, sew a piece of conductive thread about 7" long to the conductive fabric.
- These two loose threads will be attaching to the ends of your Drawdio, so make sure they are not touching or next to each other.
- Turn the piece inside out.



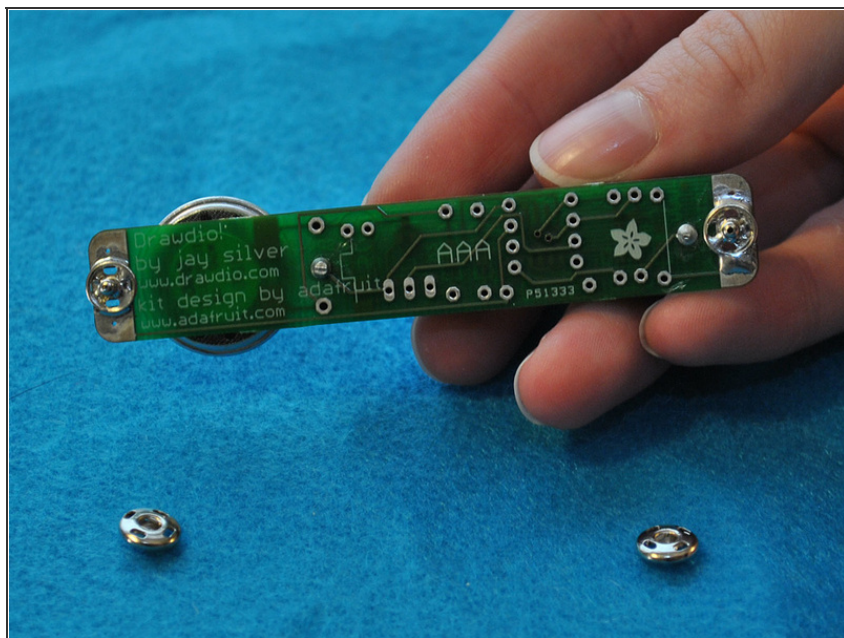
Step 8



- Stuff the body/border pieces with some fiberfill batting/stuffing to give the puppet some shape.
- *If you are having trouble stuffing the border, use some scissors to push it along to the farthest edge.*



Step 9



- To make the Drawdio detachable from the puppet to use in other projects, solder some metal sewing snaps to each conductive end. Save the other halves of the snap pairs for later in the tutorial.
- *If you'd like to permanently sew your Drawdio into the puppet, skip this step.*



Step 10



- Take your assembled Drawdio and hold it between the two conductive thread tails on the outside of your puppet. Make sure that only one end of the conductive zig-zag line touches the Drawdio.
- Mark where the ends of the Drawdio will be placed on the puppet with a marker.
- It doesn't matter which way the speaker faces - I like to hold the puppet in my left hand and have the speaker point toward me.

Step 11





- When you have the placement finalized, sew the hole where you stuffed the puppet closed and sew the ends of the border piece together (trim extra fleece if needed).
- *I left the border piece behind the Drawdio unstuffed to give it some extra space.*
- Use the loose conductive thread tails to attach metal snaps (for the removeable Drawdio) or to sew the Drawdio in securely.
- Set aside.

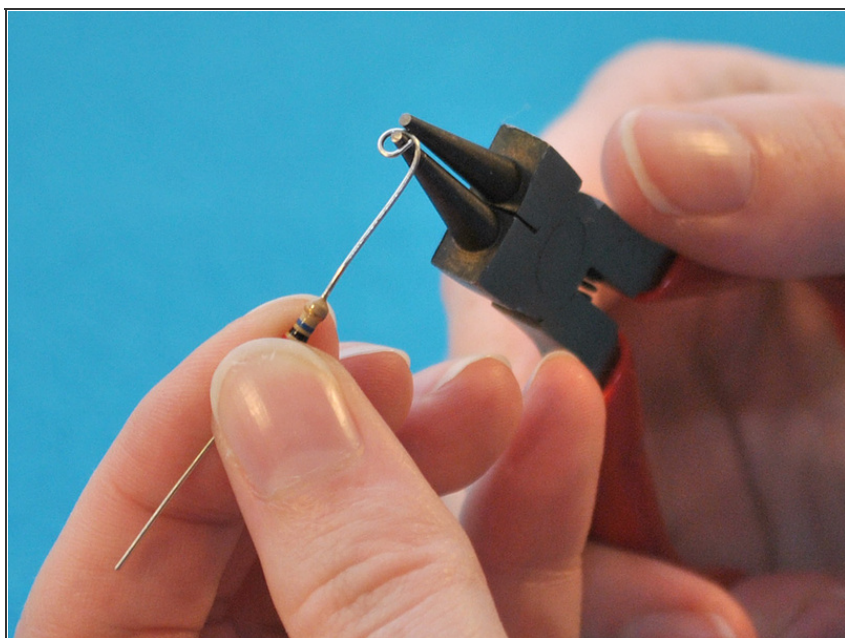


Step 12



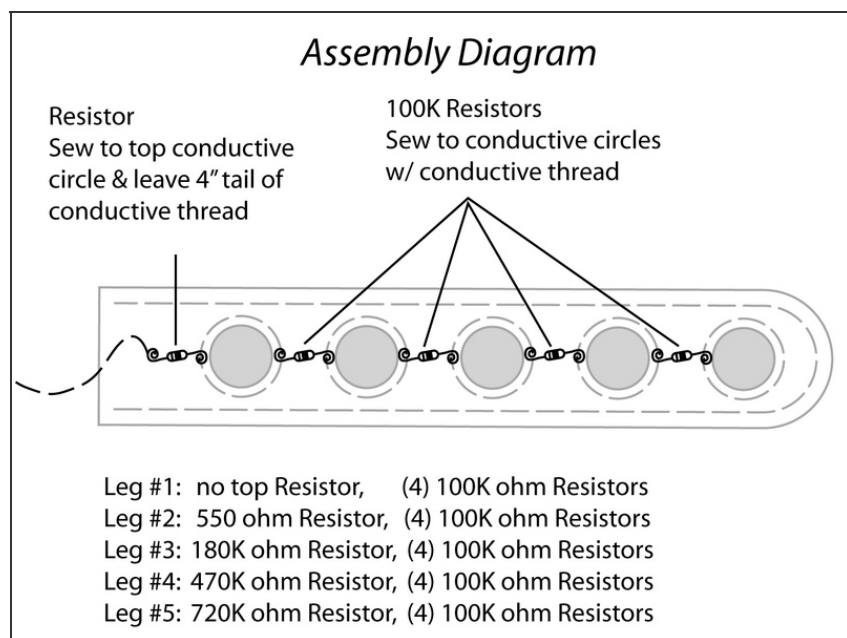
- Sew your conductive circles (E) into your legs (F) using a backstitch.
- I like to sew these by hand so I can use a really small seam allowance. I also whip stitch around the edges to make it extra secure. The circles are a little bigger than the holes, giving it a nice recessed shape. 
- *This is probably the most time-consuming part of making the puppet, so turn on your favorite DVD or get a friend to help you make an assembly line.* 


Step 13



- After all the conductive circles are attached, ready your resistors by curling the ends around with a pair of pliers to make easy-to-sew beads.

Step 14



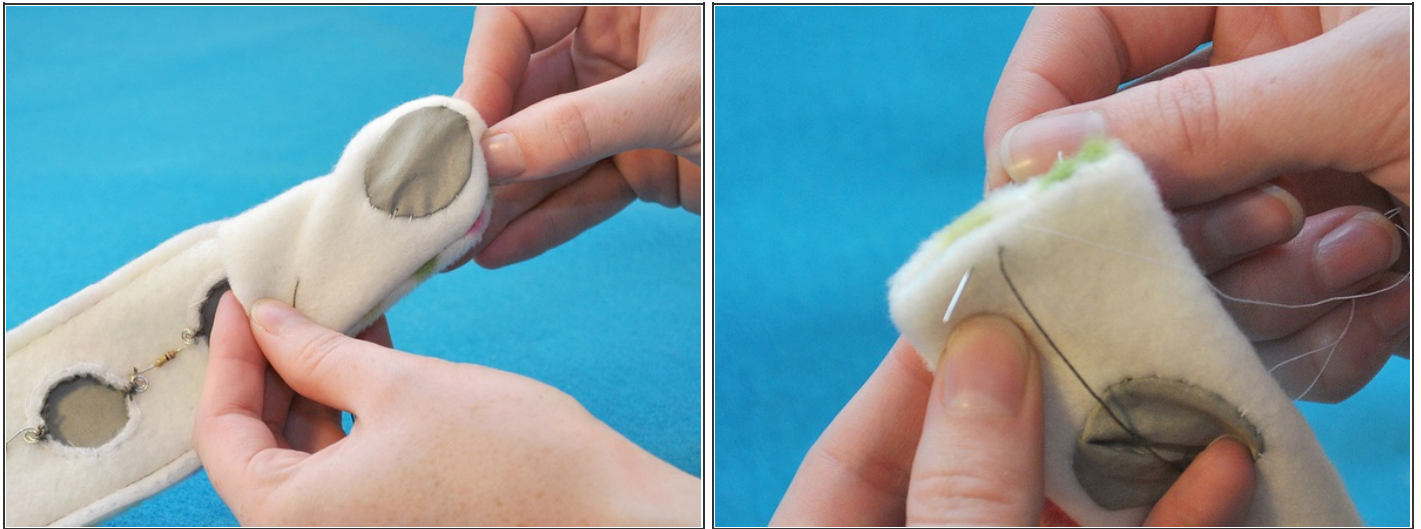
- With conductive thread, sew your resistors between pairs of conductive circles, making sure to loop the thread a few times on each end for a secure connection.
- Sew the top resistor to the fleece and pull it out the other side leaving a 4" tail.
- *One leg will have no top resistor. For this one just*  *sew a piece of conductive thread to the top circle and pull through to the front.*

Step 15



- After all the resistors have been sewn in, pin the leg pieces to the outside leg pieces with right sides together.
- Pull the loose conductive thread tail out of the way so it doesn't get caught in the seam. Sew along the edge, leaving the end open.

Step 16



- Carefully turn each leg inside out.
- Fold the raw edges inside and sew the ends of the legs shut with regular thread.

Step 17



- Arrange the legs along the zig-zag conductive thread line on the puppet body. Leave space around where the Drawdio attaches so the legs don't touch it.
- Pin and sew the legs to the zig-zag stitching using the conductive thread tails on the end of each leg.
- Use regular thread to secure the legs further if needed.

Step 18



- Sew on some eyes or facial features to personalize your puppet.

Step 19



- Attach your snap-in Drawdio, put in a battery and test it out. Place one hand in the loop and use the other to press different conductive patches on the legs.
- *If you find that the Drawdio is uncomfortable pressing on your wrist, you can add a bit of fleece over it to cushion it.*



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